

(11)Publication number :

JP07-320788

(43)Date of publication of application :

08.12.1995

(51)Int.Cl.

H01M 10/40

H01M 4/02

H01M 10/38

(21)Application number : 06-129551

(71)Applicant : HITACHI MAXELL LTD

(22)Date of filing :

18.05.1994

(72)Inventor : SAKATA TADASHI

OKAMOTO OSAMU

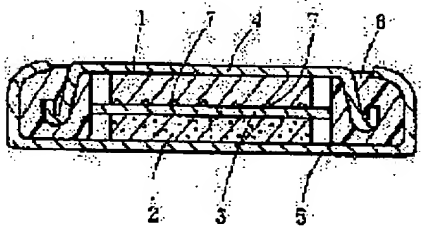
(54) LITHIUM SECONDARY BATTERY AND ITS MANUFACTURE

(57)Abstract:

PURPOSE: To provide a lithium secondary battery excellent in productivity and charge and discharge characteristic in which the chamfer of a negative electrode accompanied by charge and discharge is suppressed.

CONSTITUTION: A negative electrode 1 consisting of a lithium alloy such as lithium-aluminum alloy has a groove 7 having a depth of 10% or more of the thickness of the negative electrode 1 and a width of 115-240% of the dept on the surface opposite to a separator 3. The groove 7 of the negative electrode 1 can be easily formed by preliminarily grooving one surface of aluminium, superposing the grooved

surface of the aluminium with lithium, and electrochemically alloying the lithium with the aluminium.



Example 1

Grooves with triangle cross section were prepared with check pattern on a disk of aluminum. 100 μm thickness of lithium was laminated on the aluminum surface having the grooves. It was inserted in a negative electrode can. Then a separator was put on the above mentioned lithium, electrolyte solution was poured and a positive electrode was arranged on it. Then a battery was assembled by covering it with a positive electrode can. A negative electrode 1 was prepared by electrochemically alloying the lithium and the aluminum inserted into the negative electrode can 4 as mentioned above, under the existence of the electrolyte solution in the battery. Figure 2 shows the position of the grooves 7 on this negative electrode 1. The grooves 7 were prepared on the surface facing the separator 3, with check pattern. Their interval was 500 μm at the distance of the centers. In this example 1, the thickness of the negative electrode 1 was 300 μm , the depth of the grooves 7 was 50 μm . The width of the grooves 7 was 100 μm .